REMARKS

Applicant reserves the right to pursue the subject matter of claims drawn to non-elected inventions in one or more continuing applications.

New claims 110-122 are added. These new claims correspond to originally filed claims 2-4 and 48-57, which have been renumbered as claims 110-122, respectively. Due to the election of Group I in Response to the Restriction Requirement, Applicant has resubmitted these claims for prosecution.

SUMMARY

Applicant believes that each of the pending claims is now in condition for allowance. Applicant respectfully requests that the Examiner telephone the undersigned in the event that the claims are not found to be in condition for allowance. If the Examiner has any questions and believes that a telephone conference with Applicant's representative would prove helpful in expediting the prosecution of this application, the Examiner is urged to call the undersigned at (617) 720-3500 (Ext. 266).

Respectfully submitted,

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MARKED UP CLAIMS

1. A method for identifying a subject at risk of developing a tumor characterized by abnormal methylation of a CpG island containing TMS1 nucleic acid molecule comprising

determining a level of methylation of a CpG island containing TMS1 nucleic acid molecule in a biological sample from a subject, and

comparing the level of methylation of the CpG island containing TMS1 nucleic acid molecule in the biological sample to a control

wherein the CpG island containing TMS1 nucleic acid molecule is selected from the group consisting of

(a) nucleic acid molecules which hybridize under stringent conditions to a complement of a molecule consisting of SEQ ID NO:4 and which code for a native TMS1 polypeptide, and

(b) complements of (a), and

wherein an increase in the level of methylation of the CpG island containing TMS1 nucleic acid molecule in the biological sample compared to the control identifies a subject at risk of developing the tumor.

47. A method for identifying a subject having cancer who is at risk of being non-responsive to an anti-cancer therapy comprising:

determining a level of methylation of a CpG island containing TMS1 nucleic acid molecule in a biological sample from a subject having cancer, and

comparing the level of methylation of the CpG island containing TMS1 nucleic acid molecule in the biological sample to a control,

wherein the CpG island containing TMS1 nucleic acid molecule is selected from the group consisting of

(a) nucleic acid molecules which hybridize under stringent conditions to a complement of a molecule consisting of SEQ ID NO:4 and which code for a native TMS1 polypeptide, and

(b) complements of (a), and

wherein an increase in the level of methylation of the CpG island containing TMS1 nucleic acid molecule in the biological sample compared to the control identifies subject who is at risk of being non-responsive to an anti-cancer therapy.

110. (NEW) The method of claim 1, wherein the level of methylation is determined using a technique selected from the group consisting of methylation sensitive restriction analysis,

methylation specific polymerase chain reaction (MSP), sequencing of bisulfite modified DNA, methylation-sensitive single nucleotide primer extension (Ms-SNuPE), and combined bisulfite restriction analysis (COBRA).

111. (NEW) The method of claim 1, wherein the biological sample is breast tissue.

112. (NEW) The method of claim 1, wherein the control comprises a normal tissue from a normal subject.

113. (NEW) The method of claim 47, wherein the level of methylation is determined using a technique selected from the group consisting of methylation sensitive restriction analysis, methylation specific polymerase chain reaction (MSP), sequencing of bisulfite modified DNA, methylation-sensitive single nucleotide primer extension (Ms-SNuPE), and combined bisulfite restriction analysis (COBRA).

114. (NEW) The method of claim 47, wherein the cancer is breast cancer.

115. (NEW) The method of claim 113, wherein the biological sample is a breast cancer tumor.

116. (NEW) The method of claim 47, wherein the control is normal tissue from a normal subject.

117. (NEW) The method of claim 116, wherein the control is normal tissue from the subject having cancer.

118. (NEW) The method of claim 47, wherein the anti-cancer therapy is a DNA damaging anti-cancer therapy.

119. (NEW) The method of claim 47, wherein the anti-cancer therapy is radiation therapy.

120. (NEW) The method of claim 47, wherein the anti-cancer therapy is chemotherapy.

121. (NEW) The method of claim 47, further comprising administering to the subject at risk of being non-responsive to an anti-cancer therapy, a demethylating agent and an anti-cancer therapy.

122. (NEW) The method of claim 47, further comprising administering to the subject at risk of being non-responsive to an anti-cancer therapy, an anti-cancer therapy selected from the group consisting of biological response modifying therapy, immunotherapy, cancer vaccine therapy, hormone therapy and angiogenesis inhibiting therapy.